5 The population of squirrels in a park is modelled by the equation

$$P = 9000 \times \frac{2^t}{299 + 2^t}$$

where P is the number of squirrels t years after the start of year 2000 and $t \geqslant 0$.

(a) Find the number of squirrels at the start of year 2000. **[2]**

(b) In this question you must show detailed reasoning.

By setting up and solving a suitable inequality, determine the year in which the number of squirrels first exceeds 7000. **[4]**

(c) Show that, according to the model, the population of squirrels never decreases. **[4]**